

DESCRIPTIONS OF THE SPECIES OF ALYCÆINÆ KNOWN TO INHABIT THE
 KHASI HILL RANGES,— by MAJOR H. H. GODWIN-AUSTEN, F. R.
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[With plates III-V.]

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The new species now described were all obtained by myself in the various portions of the hills south of the Assam valley, including the Garo, Khasi, Jaintia and N. Cachar Districts, as far east as the Burreil range on the borders of the Naga Hills. They will leave perhaps but few undiscovered forms of *Alycæi* from that part of the country.—I have figured all the species, including those described by Messrs. Benson and W. T. Blanford, save one or two, and added a list which brings the number of species up to 17.

In presenting this paper I must acknowledge to very great assistance I have at all times received from the Messrs. H. F. and W. T. Blanford, and recall the pleasure of those mornings when together with the latter my collection of *Alycæi* was compared with his fine set, and all doubts regarding their identification set at rest.

This very distinct group of the *Cyclophoridæ* cannot I think be divided in the way proposed by Benson. The only distinct sub-genus that will stand would appear to be *Dioryx*; all other distinguishing points whether of form, sculpture, constriction, umbilicus, crenulation of the peristome, vary so much in the different species that we find no correlation constant. The simple smooth form of the whorl between the peristome and sutural tube and that crossed by a distinct ridge would seem to be the only well marked distinctions we can seize on, and even here we have a passage as shewn in some specimens of *A. sculptilis* and *A. crispatus*.

Alycæus conicus, n. sp. Plate III, fig. 1.

Shell narrowly umbilicated, turbinate, thick, translucent, pale corneous, pink or white, quite smooth, with shiny lustre in fresh shells, with very strong regular filiform costulation on the tumid

portion of the last whorl, the sculpture terminating abruptly both in front and behind with the exception of some raised striæ close behind the termination of the sutural tube; indistinct ribbing near the umbilicus. Spire conoid, apex obtuse; suture impressed; whorls 4-4½, rounded, last very slightly swollen, constricted and enlarging slightly again near the aperture. Constriction smooth, rather short; sutural tube moderate commencing at .045 inch distance from the mouth. Aperture slightly oblique, a perfect circle; peristome double, thick, inner continuous, projecting, slightly expanded, the outer retroflect. Operculum horny, multispiral, concave in front; smooth behind, no central boss.

Ordinary size.—Major diam. 0.12" to 0.13".—Minor diam. 0.11".—Alt. 0.10" to 0.11". Diam. of aperture 0.06".—Sutural tube, 0.045".

Habitat. Was abundant on the Limestone Hill east of Kopili river, North Cachar District, and was occasionally also found in other places, but rare.

This shell is very close to *Alycæus vestitus*, W. Blandford, but differs in its smaller size, the upper whorls being quite smooth, and in the ribbing near the sutural tube being more strongly and coarsely marked and in ending abruptly with it.

***Alycæus diagonius*, n. sp. Pl. III, fig. 2.**

Shell closely umbilicated, turbinate, thin, translucent, pale amber or pinkish colour, finely but distantly costulated on the two last whorls, closely so on the inflated portion of the last. Spire conoid, apex blunt, suture well impressed, whorls 4, rounded, constricted closely near base of the sutural tube, then swelling largely towards the mouth, the commencement of the swell forming a diagonal or recurved ridge above. Constriction smooth, sutural tube 0.053 inch; aperture diagonal, circular, peristome sinuate, double, inner lip continuous, outer expanded, slightly reflected at umbilicus and partially concealing it.

Operculum concave in front, convex behind with a small central boss or nucleus.

Major diam. 0.145".—Minor diam. 0.120".—Alt. 0.10".—Diam. of aperture, 0.075".

Habitat. The Diyung valley, north of Asálú, in N. Cachar District.

This shell is at first sight, very like *A. hebes*, Bs., but can easily be distinguished by its much narrower umbilicus, its more polished surface and less expanded mouth.

A small variety of this shell was obtained and deserves special notice. The striation is wanting throughout, and the costulation on the swollen portion of the last whorl is somewhat shorter; in these characters it approaches very near to *A. nitidus*, W. Blanford, from Arakan, but the recurved rib is in this last species much less developed.

Alycæus pusillus, n. sp. Pl. III, fig. 3.

Shell depressly turbinate, moderately umbilicated, thin, translucent, vitreous, pale horny, smooth, rarely shewing any signs of costulation, the sculpture when present is very fine and distant; closely and regularly ribbed on the expansion of the last whorl, also within the umbilicus. Spire depressly conoid, apex blunt, suture moderately impressed, whorls $3\frac{1}{4}$, the last scarcely swollen. Constriction very slight, smooth, sutural tube very short and thick; aperture oblique, round, peristome double, inner continuous, both lips expanded. Operculum thin, horny, transparent, multispiral, slightly concave and without central boss at back.

Major diam. 0.09".—Minor diam. 0.075".—Alt. 0.055".—Diam. of aperture, 0.035".—Sutural tube, 0.012".

Habitat. This shell was first found by me near Jawai, it is an abundant form in some localities, especially on the banks of the Kopili river on the road from Jawai to Asálú, viâ Súfai.

The species is very similar to *A. humilis* described by Mr. W. T. Blanford, from Akouktoung, Burma, but this last is a larger, thicker shell, and the outer lip is reflected near the umbilicus which is not so open, as in the new shell above described. On a comparison of the *Alycæi* in Mr. W. T. Blanford's collection and those obtained by me, *A. humilis* also turned up; I had previously noted the shell as differing from *H. pusillus*.

A. humilis is common at Nongtúng in the Jaintia hills; it has also been found in the W. Khasi Hills, and as far east as the Jhiri

river on the border of Manipúr; in this last locality the form is again slightly different with a shorter constriction, and approaches *A. conicus*, n. sp.

Alycæus Khasiacus, n. sp. Pl. III, fig. 4.

Shell sub-turbinately depressed, openly umbilicated, translucent, varying, much in colour from horny amber to pink and dark red browns, a shining surface, very finely striated under lens, very minute ribbing on the swell of the last whorl; in some specimens, a faint costulation is seen. Spire depressedly conoid, apex very blunt, often darker coloured than rest of the shell. Suture impressed, whorls 4, well rounded, last moderately swollen, sharply constricted and again enlarging into two vertical ridges, that nearest the mouth being the least developed, and only extending across the upper portion of the whorl, being cut off by the peristome. Constriction smooth, sutural tube very short and thick at the base. Aperture oblique, round, slightly angulate above. Peristome more or less distinctly double, inner continuous, outer slightly expanded. Operculum multispiral, very concave in front, convex behind, no boss.

Major diameter, 0.15".—Minor diam. 0.13".—Alt. 0.09".—Diam. of aperture 0.07".—Sutural tube, 0.025".

Habitat. On the highest parts of the Khasi and Jaintia Hills, abundant.

The very short tube and very fine ribbing on the last whorl, and the plain surface of the rest of the shell, combine to make this a very distinct and well marked species of the genus *Alycæus*.

A variety has the aperture less circular, with a distinct notch below, in every other respect it is identical, but a little smaller. All found in Shillong hill station were of this last type.

Alycæus crenatus, no. sp. Plate III, fig. 5.

Shell moderately umbilicated, depressedly turbinate, rather thin translucent, pale horny or white, epidermis of former colour, peeling off in old shells, with very fine indistinct costulation throughout, fine close ribbing on the swell of the last whorl. Spire depressly conoid, apex very blunt, suture well impressed. Whorls 4, round-

ed, the last moderately swollen, constricted close to base of sutural tube, with a marked subvertical ridge just behind the mouth. Constriction smooth, sutural tube long, rather thick,—aperture oblique; peristome round, deeply waved on the upper and outer but not on the columellar margin, outer lip small, slightly expanded. Operculum multispiral, concave in front, with a small projecting boss at the back.

Animal pale coloured, tentacles dark brown.

Major diam. 0·18".—Minor diam. 0·16".—Alt. 0·11".—Diam. of aperture 0·08".—Sutural tube, 0·75".

Habitat. On Burreil Range, N. Cachar, at about 5000 feet.

Near *A. plectocheilus*, but much larger, the ridge more distant from the peristome and the latter more expanded. In some specimens, the edges of the outer whorls in the operculum are much raised and bent inwards as in *Cyathopoma*.

Alycæus crispatus, no. sp. Pl. IV, fig. 1.

Shell moderately umbilicated, turbinated, rather thin, pale horny with fine sub-distant plicate costulation on the upper part of the whorls near the suture, smoother below, finely and closely ribbed on the swollen portion of the last whorl. Spire conoidal, apex rather acute, suture well impressed. Whorls 4, rounded, the last moderately swollen at the side, next constricted and smooth for a short distance, then traversed by a slightly recurved ridge, more developed in some specimens than in others, with a nearly smooth interval behind the mouth, but gradually becoming impressed with longitudinal undulations near the peristome. Sutural tube moderate. Aperture diagonal, waved on the outer and upper margins. Peristome thickened, irregularly double, expanding with 4 or 5 deep undulations on the right side, extending from the point of junction with the last whorl to the base of the aperture; the inner salient angles strongly projecting in aged specimens. Operculum multispiral, thickened, convex behind, very concave in front.

Habitat. Khasia, Jaintia and N. Cachar Hills, abundant.

This form is a close ally of *Alycæus sculptilis*, Bs. A variety was obtained in the eastern side of the Hill ranges near Asálú &c., and

figured in Pl. iv, fig. 2; it differs from Benson's Burmese species in having a well marked ridge on the constriction and an expanded peristome to which there is no tendency in *A. sculptilis*, Bs.

ALYCÆUS INGRAMI, W. Blf., var. Plate IV, fig. 3.

Differs from the described form from Arakan, in the mouth being larger, and there is a tendency to undulation on the outer margin of the peristome, generally 2 notches are present.

Major diameter, 0·24".—Minor diam. 0·24".—Alt. 0·16".—Diam. of aperture 0·11".—Sutural tube, 0·09".

Habitat. Neighbourhood of Asálú, N. Cachar Hills.

This shell assimilates in some respects *A. prosectus*, Bs.

ALYCÆUS INGRAMI, var. *Nagaensis*, Plate V, fig. 2.

Shell depressedly globose, openly umbilicated, thick, slightly translucent white, generally covered with a thin muddy coating, finely and sharply costulated throughout. Spire depressly conoid, apex blunt, suture impressed, whorls 4, rounded, the last much swollen, constriction close to the base of sutural tube, slightly swelling again towards the mouth, quite smooth, sutural tube very long and thin. Aperture oblique, circular, peristome double, both lips close and slightly expanded. Operculum black, smooth and concave in front, convex at back, with a central boss.

Major diam. 0·20".—Minor diam. 0·32".—Alt. 0·29".—Diam. of aperture 0·15".—Sutural tube, 0·15".

Habitat. Neighbourhood of Asálú, rather local in its distribution, but then abundant.

Its well costulated surface distinguishes it from the preceding variety of *A. Ingrami*.

Alycæus Jaintiacus, no. sp. Pl. V, fig. 3.

Shell sub-obtusely perforated, turbinata, pale amber or white, smooth, finely ribbed on the swollen portion of the last whorl, with sign of sub-distant ribbing behind the termination of the sutural tube. Spire conoid, apex blunt, suture impressed. Whorls 4, rounded, last very slightly swollen, then moderately constricted, swelling again in a low ridge, somewhat recurved. Constriction smooth; sutural tube, rather short, fine, aperture sub-vertical,

round. Peristome deeply waved within; salient angles between the undulations nodose, inner lip continuous, outer reflected considerably near the umbilicus.

Major diam. 0·13".—Minor diam. 0·11".—Alt. 0·10".—Diam. of aperture 0·07".

Habitat. Obtained in Nongjinghi Hill, Jaintia; by no means abundant.

ALYCÆUS OTIPHORUS, Bs. var. Pl. V, fig. 6.

This is a closely allied shell to Benson's type, differing, however, in its smaller size, stronger sculpture and in having very fine lines of sculpture on the constriction, close behind the peristome.

Major diam. 0·13".—Minor diam. 0·10".—Alt. 0·14".—Diam. of aperture with the peristome, 0·06".

Habitat. Wooded slopes of the Maugut river and Marangksi Peak, Jaintia Hills, rather a rare shell. The same variety of *Alycæus otiphorus* was also obtained in N. Burmah by Dr. Anderson, when proceeding with the mission to Yunan.

ALYCÆUS SCULPTILIS, Bs.

This species was found at Mao Kasa, differing in no respect from Burmese specimens of that shell.

List of known *Alycæi* from Khasi Hill ranges.

<i>A. otiphorus</i> , Bens. var.	Pl. V, fig. 6.
<i>A. graphicus</i> , W. Blf.	Pl. V, fig. 5.
<i>A. crenatus</i> , no. sp.	Pl. III, fig. 5.
<i>A. Jaintiacus</i> , no. sp.	Pl. V, fig. 3.
<i>A. crispatus</i> , n. sp., var.	Pl. IV, fig. 2.
<i>A. crispatus</i> , no. sp. (typical)	Pl. IV, fig. 1.
<i>A. Ingrami</i> , W. Blf., var.	Pl. IV, fig. 3.
<i>A. Ingrami</i> , W. Blf., var. <i>Nagaensis</i> ,	Pl. V, fig. 2.
<i>A. prosectus</i> , Bens.	Pl. V, fig. 1.
<i>A. pusillus</i> , no. sp.	Pl. III, fig. 3.
<i>A. conicus</i> , no. sp.	Pl. III, fig. 1.
<i>A. Theobaldi</i> , W. Blf.	Pl. IV, fig. 4.
<i>A. hebes</i> , Benson,	Pl. IV, fig. 5.
<i>A. diagonalis</i> , no. sp.	Pl. III, fig. 2.
<i>A. Khasiacus</i> , no. sp. ...	Pl. III, fig. 4.
<i>A. (Dioryx) urnula</i> , Benson,	Pl. V, fig. 4.
<i>A. sculptilis</i> , Bs.	
<i>A. humilis</i> , W. Blf.	



0.12
0.10

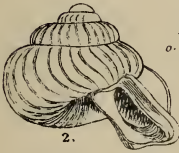


1. a.

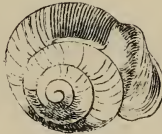


1. b.

1.



0.145
0.10



2. a.



2. b.

2.



0.055
0.09



3. a.



3. b.

3.



0.13
0.09



4. a.



4. b.

4.



0.11
0.18



5. a.



5. b.

5.

1. *Alycaeus conicus*, n. sp. 3. *Alycaeus pusillus*, n. sp.
 2. " *diagomius*, n. sp. 4. " *Khasiacus*, n. sp.
 5. *Alycaeus crenatus*, n. sp.



1.



1. a.

+
0.13. 0.08



1. b.



2.



2. a.

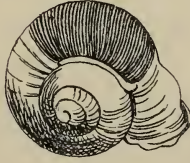
+
0.14.5. 0.10.



2. b.



3.



3. a.

+
0.24. 0.16.



3. b.



4.



4. a.

+



4. b.



5.



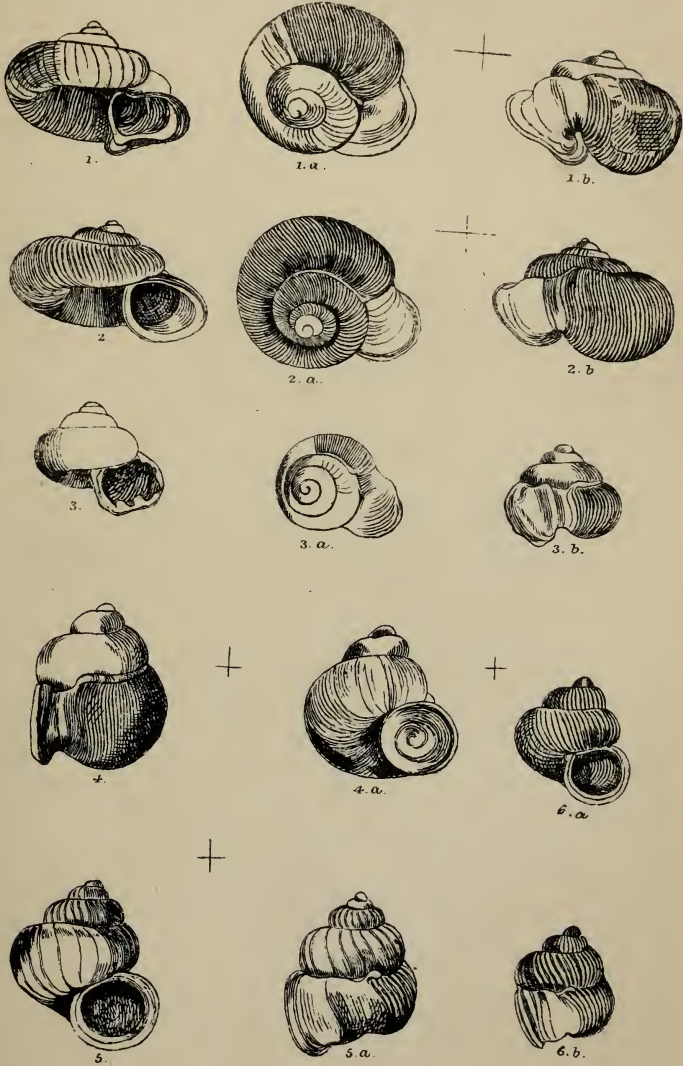
5. a.

+



5. b.

1. *Alycaeus crispatus*, n. sp. 3. *Alycaeus Ingrami*, W. Blf. var.
 2. *A. crispatus*, var. 4. *A. Theobaldi*, W. Blanf.
 5. *Alycaeus hebes*, Benson.



1. *Alycaeus prosectus*, Bens.

2. *A. Ingrami* W. Blf. var. *Nagaensis*.

3. *A. Jaantiacus*, n. sp.

4. *Alycaeus (Dioryx) urnula*, Bens. var.

5. *A. (D.) graphicus*, W. Blf.

6. *A. (D.) otiphorus*, Bens. var.